

REMARKS

Applicant, his principal representatives in Germany, and the undersigned have carefully reviewed the first Office Action on the merits in the subject U.S. patent application, together with the prior art cited and relied on in the rejection of the claims. In response, the Substitute Specification, drawings and claims of the application have been amended. It is believed that the claim now pending in the subject application is patentable over the prior art cited and relied on, taken either singly or in combination. Reexamination and reconsideration of the application, and allowance of the claims is respectfully requested.

The subject application is directed to, and claims a printing press which includes a first printing group and a second printing group as seen in Fig. 1. Each of these printing groups includes at least one forme cylinder with at least one printing forme on it. As may be seen in Fig. 2, typically there are a plurality of printing formes 08 on each of the forme cylinders 07. As is well known in the art, these printing formes are provided with print images, in print image locations 09 that are within each such printing forme 08. It is to be understood that each such printing forme 08 is a physical object, such as a plate and that the print image location is a portion of that plate which has been treated to receive ink which will be used to form a printed image.

As is depicted in Fig. 1, there are provided eight printing groups 04 in the printing unit 02 that is part of the printing press 01. Each such printing group includes a forme cylinder 07 and a transfer cylinder 06. Two transfer cylinders 06 of two cooperating printing groups 04 engage each other to print a web of material 03, typically paper as web of material 03 passes between the printing groups.

Each of the printing groups 04 applies its particular color to the web 03. As the web 03 passes through the several printing groups in the several printing units 02, the web is provided with a printed image that is formed by the cooperative efforts of the various printing groups.

As the web passes through the several printing units 02, it typically lengthens in the direction of web transport P and also widens in a direction which is transverse to the direction of web transport. The causes of this elongation and widening of the web 03 are the application of ink and dampening fluid to the web and the tension that is exerted on the web.

In accordance with the present invention, as recited in currently amended claim 72, the first forme cylinder, which is part of the first printing group, includes at least one first printing forme. That first printing forme has at least first and second print image locations, each of which has a circumferential length and a transverse width. At least one of the print image location lengths and the print image location widths of these first and second print images are different from each other by either a first print image location length factor or a first print image location width factor. This difference is based on the elongation and/or lateral widening of the web, and a recognition that this web distortion will affect each print image location differently.

The second printing group also has at least one second forme cylinder that is provided with at least third and fourth print image locations. Those third and fourth print image locations also have individual lengths and widths which vary from each other by second print image location length factors and second print image location width factors.

An image application system, depicted schematically at 40 in the Replacement Drawing, and described in detail in paragraph 33 of the Substitute Specification, is used to form the various print image locations on each of the printing formes on the forme cylinders. The material to be printed has at least one of a longitudinal elongation factor and a transverse elongation factor. These longitudinal elongation factors and transverse elongation factors are used by the image application systems to determine the print image location length factors and the print image width factors. The result is that the print image locations are formed on the printing formes as a function of the longitudinal elongation factor and of the transverse elongation factor of the material web. Since the material web elongates differently, and also spreads transversely at different rates across its width, with the outer edges of the web differing

more than the center of the web, the utilization of the print image location length factors and the print image location width factors, as a function of the longitudinal and transverse elongation factors of the web, in the positioning of the print image locations by the image application system provides a resultant image that has proper color orientation and alignment.

In the first Office Action, the Examiner noted that the applicant has not filed a certified copy of the foreign priority document. While the undersigned agrees with the Examiner that there does not appear to be a certified copy of the priority document in the electronic file of the subject U.S. patent application, it is believed that the function to provide such a copy is that of either the U.S. Patent and Trademark Office or of the International Bureau of WIPO. The certified copy of the priority document was made available to WIPO and was received at the International Bureau on March 22, 2005. A copy of the notice of such receipt is enclosed. There is also enclosed a copy of the PCT/IB/304 form confirming the submission or transmittal of the priority document. The undersigned has attempted to contact several USPTO officials to correct the situation. It is believed that the applicant has complied with his responsibilities in this regard and that the function to place a copy of the certified priority document in the file of the subject application is not that of the applicant.

In response to the Restriction Requirement being made final, applicant has cancelled non-elected claims 107-123. Claims 73 and 76 have been cancelled. Claims 74, 75 and 77-106 have been withdrawn from consideration pending the allowance of currently amended, independent claim 72. Once claim 72 has been allowed, it is expected that claims 74, 75 and 77-106 will be rejoined. In anticipation of that rejoinder, several of those withdrawn claims have been amended. Applicant again expressly reserves the right to file one or more divisional patent applications directed to the inventions or groups of inventions set forth in claims 107-123.

The drawings were objected to as failing to show every feature of the invention specified in the claims. It was noted that the image application system for each of the forme cylinders was not shown in the drawings. In response, there is submitted herewith a Replacement Sheet

showing the image application system schematically at 40 and being associated with each of the forme cylinders. The Examiner's attention is directed to paragraph 033 of the Substitute Specification where the existence of such image application systems is set forth. It is believed that the depiction in the drawings of features which are clearly recited in the specification does not constitute any new matter. Paragraph 033 of the Substitute Specification has been amended to recite the reference numeral assigned to the image application systems, as are now depicted in Fig. 1. The entry of the replacement sheet of drawings into the subject application is respectfully requested.

The specification of the subject application was objected to as having several minor typographical errors. These have been corrected. During a review of the Substitute Specification, in the course of the preparation of the present amendment, several other similar typographical errors were also noted. Those have also now been corrected. As discussed above, paragraph 033 has also been amended to include the reference numeral set forth in the revised Fig. 1 of the drawings. None of these changes or additions add any new matter. Their entry is respectfully requested.

Claim 72 was objected to as having a minor informality. That informality has been corrected.

Claim 72 and 76 were rejected under 35 U.S.C. 112, first paragraph as failing to reasonably enable the carrying out of the function of forming print image locations on a forme cylinder based on the elongation factors of the material to be printed. The undersigned respectfully disagrees.

As is set forth in paragraph 033 of the Substitute Specification, known or determinable parameters for taking into consideration the required changes in the dimensions or positions of the print image locations 09 on a printing forme are supplied to the image application system 40 for each forme cylinder. As discussed at paragraph 007, the factors of the printing press, and the factors of the material web, which affect the longitudinal elongation and/or the transverse

elongation of the material to be printed may already be known. For example, these values may be known from prior experience. These values can be supplied to the computer that, as discussed at paragraph 033, controls the image application system. As is also discussed in paragraph 033, the position of each image area on the printing forme or formes carried by each forme cylinder is also determined by the occupation plan which is developed during the pre-print stage. As is discussed further at paragraph 034, it is also possible to determine the factors in changing the length of the print image location, the width of the print image location and the center point of the print image location, which can be continuously determined during the ongoing printing presses. If these factors exceed a permissible deviation from the determined desired values, it may be necessary to prepare a replacement printing forme with a revised print image location.

Print application systems are generally known in the prior art. The secondary reference to Wentworth, U.S. Patent No. 6,253,678 describes one such print application system, which it refers to as a plate setter 18. Note the discussion at column 3, starting at line 63 and continuing at the top of column 4. In addition, note the discussion of U.S. Patent No. 5,365,847 in the cited Wentworth patent. It is respectfully submitted that the disclosure of the subject application, taken in conjunction with what is known in the prior art, is sufficient to enable a person of skill in the art to make and use the invention, as set forth in currently amended claim 72. Withdrawal of this rejection is respectfully requested.

Claims 72 and 76 were rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1182 035 to Kusunoki in view of U.S. Patent No. 6,253,678 to Wentworth. It is noted that the Kusunoki reference is the equivalent of U.S. Patent Application Publication No. 2002/0023558. The subsequent discussion of the Kusunoki reference will be directed to the U.S. application.

In the Kusunoki application, there are depicted four, and possibly a fifth set of printing units P. Each one these includes a plate cylinder PC and a blanket cylinder BC, all as depicted in Fig. 1. Each plate cylinder is physically split longitudinally into two plate cylinder halves.

Each such plate cylinder half can be moved both laterally and circumferentially to attain better regulation.

It is asserted that Kusunoki discloses an image application system at paragraph 0050, lines 3 and 4, wherein first and second print image locations are formed by the respective halves PC₁ and PC₂ of each plate cylinder. It is believed that the references should be to paragraph 0052 of the Kusunoki published application because that is where the two plate cylinder halves PC₁ and PC₂ are recited as being usable to move a pair of printing plates.

The mounting of a series of printing plates onto a plate cylinder does not constitute an image application system, as that term is described in the specification of the subject application. A printing plate includes image forming areas and areas that do not form an image on the material to be printed. At one time, printing plates were produced by hand and had engraved areas which defined the print image locations. In more recent times, as discussed in the Substitute Specification, at paragraph 0033, the image application system uses a laser, for example, to apply the print image location to the printing forme. The laser is controlled by a computer on the basis of a digital data set that has been supplied to the image application system. The image application system applies the print image locations to each of the printing formes electronically. Kusunoki does not teach or suggest an even remotely similar apparatus.

The secondary reference to Wentworth, U.S. Patent No. 6,253,678, was the primary reference cited and relied on in the prosecution of the EPO equivalent to the subject application. It is interesting to note that the European patent was issued over this reference. The Examiner is invited to review the text of allowed claim 1 in EP 1708 886 B1 which is believed to be the equivalent of currently amended claim 72 in the subject U.S. application. In Wentworth there is disclosed an arrangement of four printing units that form an offset web press system 10. These printing units are described as being usable to print four different colors to a web 14 to form a multiple color image on the web. The offset web press system 10 utilizes aluminum printing plates 17 which are imaged by a plate setter 18. That plate setter 18 is responsive to electronic

data which is representative of one or more of the images to be printed. It is thus generally like the image application system of the present invention. It uses electronic data to form images on the printing plates 17. That electronic data is supplied from suitable software or from a storage device. That is where the similarity of the Wentworth device to the present invention ends.

In Wentworth, as discussed starting at the middle of column 3, a test press run is conducted, using test plates. The resultant images include suitable registration marks. Once the test press run has been completed, the test images are inspected to determine one or more degrees of misregistration. The misregistration is determined using a high power magnifying glass. Once the amount of misregistration has been determined, modified image data can be sent to the plate setter 18. The plate setter 18 then produces new printing plates 17 which are applied to the forme cylinder for use during a production run.

Alternatively, more testing can be done, using the new plates 17. If there are still registration errors, the plate setter 18 can again be used to provide more sets of plates 17 which can be applied to the forme cylinders.

The Wentworth reference notes that misregistration may be the result of web growth. It also discusses scaling of each color of the multiple color image in either a longitudinal direction or a transverse direction. This scaling is the determination of the misregistration that is used to provide the modified data that then is used by the plate setter 18 to produce new printing plates 17.

It is noted that the Examiner, in his discussion of the Wentworth reference, refers to an "...image application system (12)..." It is to be noted that the element 12 in the Wentworth reference is a press controller. The plate setter 18 of Wentworth is the element that is equivalent to the image application system of the subject invention.

In currently amended claim 72, it is recited that the first forme cylinder has at least first and second print image locations, each of which has a length and a width. It is further recited in

currently amended claim 72 that the length and width of these first and second print image locations differs from each other by at least one of a length factor and a width factor. Claim 72 further recites that the second forme cylinder has third and fourth print image locations. These each also have their own lengths and widths which differ from each other by at least one of several print image location length and width factors.

Claim 72 recites at least one of a longitudinal elongation of the material to be printed and a transverse elongation of that material to be printed. These elongations both have factors; i.e. a longitudinal elongation factor and a transverse elongation factor. Those factors are used to arrange the print image locations on the at least first and second forme cylinders, by the image application system, with the print image location length factors and the print image location width factors each being a function of at least one of the longitudinal elongation factors and the transverse elongation factors.

In the subject invention, as set forth in currently amended claim 72, the positioning of the print image locations on the forme cylinders are applied by the image application system using the print image location length and width factors, as adapted to take into consideration the longitudinal elongation of the material to be printed and to take into consideration the transverse elongation of the material to be printed. As discussed in the Substitute Specification, these elongation factors of the web that is to be printed can be determined from prior experience or can be determined, for example in a computer simulation that is done in a pre-print stage. In very substantial contrast to the Wentworth disclosure, these print image locations are applied to the forme cylinders based on these factors prior to the printing of the material to be printed. In other words, the subject invention places the print image areas on the forme cylinder printing formes prior to printing of the material based on known characteristics of the material to be printed. In Wentworth, the plates are positioned, the web is printed, the misregistration is determined and new plates are prepared and modified. Wentworth is essentially a trial and error procedure. In the subject invention, the known characteristics of the web, and the

transverse print image location length and width factors are utilized to apply the image locations to the printing plates or formes in their proper locations before printing is ever started. It is thus believed that the invention, as set forth in currently amended claim 72, is patentable over the prior art cited and relied on, taken either singly or in combination.

SUMMARY

The Substitute Specification, drawings and the sole claim now pending in the application have been amended. It is believed that claim 72, as currently pending, is patentable over the prior art cited and relied on. Allowance of claim 72, rejoined of the claims currently withdrawn from consideration but linked by claim 72, and passage of the application to issue, is respectfully requested.

Respectfully submitted,

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